



EFFECT OF D.I GROW ENHANCER ON ORYZASATIVA PRODUCTION IN SERAYU VARIETY, INDONESIA

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ABSTRACT

The objective of the research was to know the production of *Oryza Sativa*-L (Paddy) for the treatment of Grow Technology (Organic Fertilizer) and without its treatment, also their comparison. D.I Grow Enhancer use for increasing the rice production in Serayu to stimulate vegetative grow of the paddy. In other words, this study aimed to assess the effect of D.I grows enhancer on the paddy production in Serayu variety. Methods: Utilization of (Urea, JSP36, KCL) fertilizer and rice production data were collected from 48 respondents in Serayu, Indonesia. They used (Urea, JSP36, KCL) fertilizer and D.I grow enhancer in farming area to know the difference effect in rice production. Results: The rice production can increase 3 times when using D.I grow as organic fertilizer than (Urea, JSP36, KCL) fertilizer. Conclusion: There are great potentials D.I grow enhancer as organic fertilizer for increasing rice production.

KEYWORDS: D.I grow enhancer, paddy production, Serayu.

Introduction

There are 99.6 millions Ha or 69% of Indonesia upland cultivated in a productive manner.⁽¹⁾ Hidayat and Mulyani, 2005. need a running of production called environment care⁽²⁾ Taufiq and Widjanarko, 2007. the production of soybean to raise with a good technique and development. ⁽³⁾ Taqhezadeh, R.Y., Fathipour and K. Kanali, 2008, studying about the influence of temperature on life-table parameters of *Stethourusgilvifrons* (Mulsant) (Cleoptera). Mating of Mulsant was also observed to be more frequent during clear weather either in the morning or in the late noon and less frequent during cloudy weather. The three authors above proofed that the researches were looking of what is to be better of the plantation care or improved. Rice (*Oryza sativa* L.) is one of the most important cereal crops of the world, grown in wide range of climatic zones, to nourish the mankind⁽⁴⁾ Place, 1970. It holds pivotal food as daily nutritious consumption for the biggest population in Southeast Asia, partially Indonesia. Thousand varieties of *Oryza sativa* L. has been recognized as a result of domestication plant since 2300 BC. In Indonesia, a hundred varieties have improved as an answer to fulfill population consumption. Each of these variants has distinct treatment to grow⁽⁵⁾ Setyaningsih, 2014.

Nowadays, using fertilizer from one month of the plantation until three months is one of strategy to increase the rice production. The presence of fertilizer in number, type, quality, price, place, and time will determine the quantity and the quality of agricultural products produced⁽⁶⁾ Chaturvedi, 2005. Fertilizer contributed 20% to the success of improvement production agriculture, including agricultural rice products which achieved self-sufficiency in 1984. Fertilizer consumption reached 73.3 million tons by the year 2000⁽⁷⁾ Ahmed, 1994.



Photo of Oryza Sativa, Serayu variety was just planted. Before seeding in another place.

One of the plantation care produce by fertilizers used is called a technology breakthrough or an innovation in growing plantation. The definition of innovative from⁽⁸⁾ Business Dictionary.com, 2014. as "the process of translating an idea or invention into a good service that creates value for which customers will pay, is synonymous with risk taking and organizations that create revolutionary products of technologies take on the greatest risk because they create new markets.

Fertilizer used is a must for the plantation nowadays, whether organic fertilizer or anorganic fertilizer used. Without using fertilizer the production of the plantation would be unsatisfy the planter, and also the producer, namely the owner of the land and the cultivator. According to⁽⁹⁾ Warr, 2005. fertilizer used 53,9 % of total cost compare to labours used is 4,3% of the total cost.

Fertilizers used in *Oryza Sativa*-L. In the location of the research were wellknown since the introduction till nowadays. *Oryza Sativa* L. Include varieties seed of 1. Variety of IR64 2. Variety Serayu and 3. Variety Super Win. 1. IR 64 is palatable eat by the consumer from one until 10 days after milling and cooking, and have no contact with water before. Serayu is also palatable eat by the consumer from one to fourteen days after milling and cooking and have no contact with water before, while Super Win is the most palatable eat by the consumer from one to 21 days after milling and cooking and have no contact with water before.



Photo of Oryza Sativa/Serayu variety in 30 days planted.

Variety Serayu harvest after 90 days of plantation time not included of seeding about 21 days, while Variety Super Win harvest after 120 days of plantation time not included of seeding about 21 days. Variety IR64 harvest after 90 days of plantation time not included of seeding about 21 days.⁽¹⁰⁾ Alexander Decker, 2013.

The fertilizer used in the location of *oryza sativa* L. Plantation known as One, Urea, or JPU, the total used of each farmer ; two, SP36, or JPSP36, the total used of each farmer, three, KCL, or JPKCL or the total used of each farmer as follows: The total of forty eight farmers used of Urea fertilizer for three months plantation of paddy was 9830 Kg. The total of forty eight farmers used of SP36 fertilizer was 5258 Kg, and the total of fifty farmers used of KCL for three months was 4276 Kg. The average used of Urea was 204 Kg, SP36 was 109 Kg and the used of KCL was 89 Kg. They depend on the availability in kiosk⁽¹¹⁾ Loing, J. 2013.



Photo of Oryza Sativa/Serayu variety in eighty days planted, Yellow paddy ready to Harvest.

In this research, D.I grow enhancer as organic fertilizer was used for increased the rice production in Serayu, Indonesia. D.I Grow enhancer stimulates the vegetative growth of plants. It is used on all plants both flowering and non flowering, fruits and non fruits trees. It makes the plants have very many flowers and fruits, it reduces the dropping of flowers and fruits, enhances and strengthens plant immune system, improves quality and quantity of fruits and flowers⁽¹²⁾ Dynapharm. This study was aimed to assess the effect of D.I grows enhancer on the paddy production in Serayu.

Material and Methods

The materials used in this research is Serayu variety seed in 48 respondents plantation. And the treatment of fertilizers "grow enhancer technology". The research was conducted in January to March 2013 in the Field of Wetland paddy of 48 respondents in Kecamatan Langowan Minahasa Sulawesi Utara, Indonesia. The fertilizers data taken from the 48 respondents had their total using and the average using, also the comparison using the Organic fertilizer, Grow Technology Enhancer, and not using the grow technology enhancer". For statistics Analysed were 48 respondents. To know the significance effect from grow enhancer, statistical analysis using independent-sample T test was performed (Supplementary 1).



Photo of Oryza Sativa/Serayu finish harvest

D.I grow enhancer

D.I Grow is a foliar fertilizer formulated from rich macro and micro nutrients, trace ingredients and humic acid. It helps the growth of various vegetables, fruits and flowers while improving the quality of soil. It is safe, effective, and environment friendly. Application of D.I grow enhancer in rice with dose 4 cc in one liter of water and spread on the rice plant once in 20 days. Component of D.I grow enhancer are C 8.46%, N 1.49%, P₂O₅ 2.13%, K₂O 2.41%, MgO 0.36%, CaO 17.10 ppm, Cl 0.07%, Fe 271 ppm, Cu 13.81 ppm, Zn 10.29 ppm, Mn 1.68 ppm, B 20.30 ppm, MO 3.80 ppm, humic acid 0.15%, and H₂SO₄ 0.03%⁽¹²⁾ Dynapharm, 2015. The treatment and doses for paddy were 1. Spraying once in ten days with mixing one Liter and 4 ml/ per ml the same as one tea spoon tabular as follows :

Table 1. The Treatments and Doses of D.I. Grow Application to Paddy

Time of Spray	Doses : Mix 4 ml D.I. Grow Enhancer with a liter of water	1 st Month	2 nd Month	3 rd Month
1 st 3 x	Once for 7-10 days	First, 10 days	First, 15 days	First, 15 days
2 nd 2 x	Once for 15 to 20 days	Second, 10 days	Second, 16 to 30 days end the 2 nd month	Second, 16 to 30 days end the third month.
3 rd 2 x	Once for 15 to 20 days	Third, 10 days end the 1 st month		

The capability of D.I. Grow enhancer for :

1. Leaf, to enhance the leaf's grow more than before, harder, bigger and shining with nature color and not easy to fall.
2. The trunk, to grow rapidly, bigger and hard.
3. The flower, to rapidly grow and not easy to fall.
4. The fruit, to produce from flower rapidly bigger, delicious and aromatics.
5. The root, to grow rapidly and harder.
6. The bud, to grow rapidly.
7. The bad land structure, to repair and improve.¹² Dynapharm, 2015.

The experience of farmers was although the application of D. I. GrowEnhancer was stopped, but the plantation in sprayed land before, as when the applying D. I. Grow Enhancer time, still produce the same good production. Proofed the bad land structure repaired and improved.

Field experiment

The research was conducted in January to March 2013 in the Field of Wetland paddy of 48 respondents in Serayu variety, Langowan Minahasa Sulawesi Utara, Indonesia. This region has an average temperature (25°-30°C) and has high rainfall with fertile soil for farming activities. Forty one mountains with an average altitude of 1112-1995 m consist of the composition of young volcanic and active, with many rivers in between the region.

Experimental design

Utilization of (Urea, JSP36, KCL) fertilizer and rice production data were collected from 48 respondents in Serayu variety, Indonesia. They used (Urea, JSP36, KCL) fertilizer for first trial and second trial using D.I grow enhancer in farming area to know the the difference effect in rice production⁽¹¹⁾ Loing, J., 2013.

Statistical analysis

Data obtained from Fertilizer comparison using in this study were Statistical analysed and were performed using the software package SPSS for Windows (SPSS Inc., Chicago, IL).

Results and Discussion

Based on statistical analysis, the effect of grow enhancer on the rice production is significant. It indicates by p value (0.000). P-value <0.05 means, grow enhancer that used as organic fertilizer can increase the paddy volume production significantly.

The result of the research showed that the farmers or forty eight respondents using Urea Fertilizer was all 9830 Kg. lap means area using by each farmer in square Meter, JBP means Seed using by each farmer in Kg., and JPU means the used of Urea fertilizer by each farmer. The average showed the used of Urea fertilizer of each farmer was 204 Kg.

The result of the research showed that the farmers or forty eight respondents using SP36 Fertilizer was all 5258 Kg. lap means area using by each farmer in square Meter, JBP means Seed using by each farmer in Kg., and JPSP36 means the used of SP36 fertilizer by each farmer. The average showed the used of SP 36 per farmer was 109 Kg.

The result of the research showed that the farmers or forty eight respondents using KCL Fertilizer was all Kg. lap means area using by each farmer in square Meter, JBP means Seed using by each farmer in 4276 Kg., and JPKC means the used of KCL fertilizer by each farmer. The average showed the used of KCL per farmer was 89 Kg.

Fertilizers are necessary to support an affordable and sustainable agriculture. The farmers in Serayuvaryety used Urea, JSP3P and KCL for growing the rice. Average data from 48 farmers as respondents the use of Urea, SP36 and KCL were 204.7 kg (51%), 109.5 kg (27%), 89 kg (22%) respectively. Urea is the most fertilizer used by farmers and due to the assumption that Urea can better help them in growing *Oryza sativa*⁽⁸⁾ Triyono et all. Urea consumption in paddy field is significantly going up in every year..

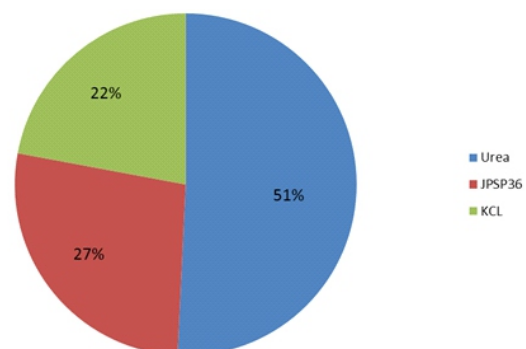


Figure 1. Percentage of Urea JPSP36 and KCL fertilizer utilization in Serayu, Variety Indonesia

Increasing the rice production is challenge for the farmer. In this experiment, grow enhancer was used and compared to (Urea, JSP36 and KCL) fertilizer in increasing rice production. The result shows that rice production using D.I grow enhancer produce higher 3 times yield than rice production using (Urea, JSP36 and KCL) fertilizer. Nutrition in organic fertilizer D.I grow enhancer more complex than (Urea, JSP36 and KCL). Specific nutrition influences the content of photosynthetic pigments, the synthesis of the enzymes taking part in the carbon reduction, the formation of the membrane system of chloroplasts. Thus, increase in growth and yield of rice⁽⁹⁾Mengel. It means, D.I grow enhancer more prospective to use in rice field as organic fertilizer.

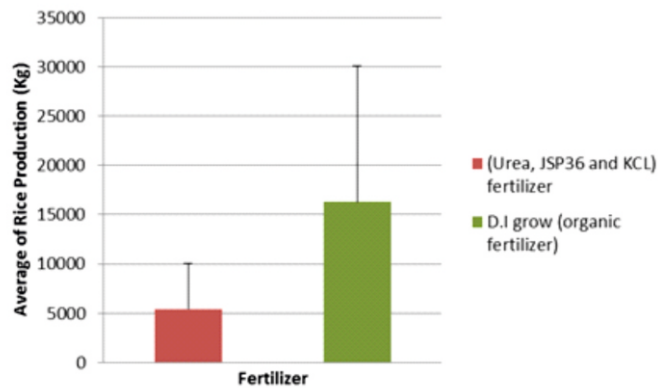


Figure 2. Comparison of rice production using D.I grow and (urea,JSP36,KCL) Fertilizer

Conclusion

It may be concluded that Urea is the used as fertilizer in Serayu variety, Indonesia showed by Mean 5443.88. ⁽¹⁰⁾ Loing, Jeane Catty. The Rice production can increase 3 times when using D.I grow as organic fertilizer showed by Mean 16301.63 than (Urea, JSP36, KCL) fertilizer. 95% Confidence Interval showed that confidently there are great potentials D.I grow enhancer as organic fertilizer for increasing rice production. Based on statistical analysis, the effect of grow enhancer on the rice production is significant. It indicates by p value (0.000). P-value <0.05 means, grow enhancer that used as organic fertilizer can increase the paddy volume production significantly.

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Supplementary 1.Statistic analysis

Group Statistics					
	group	N	Mean	Std. Deviation	Std. Error Mean
rice	recent	48	5433.88	4591.222	662.686
	D.I grow	48	16301.63	13773.667	1988.058

Independent Samples Test										
		Levene's Test for Equality of Variances	t-test for Equality of Means							
			95% Confidence Interval of the Difference							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
rice	Equal variances assumed	23.604	.000	-5.186	94	.000	-10867.750	2095.597	-15028.606	-6706.894
	Equal variances not assumed			-5.186	57.317	.000	-10867.750	2095.597	-15063.607	-6671.893